



John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

11/19/2018

Certified Mail

Alex Ringler
Emerald Bioenergy, LLC formerly Ringler Energy, LLC
461 State Route 61
Marengo, OH 43334

No	TOXIC REVIEW
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
No	CEMS
No	MACT/GACT
No	NSPS
No	NESHAPS
No	NETTING
No	MODELING SUBMITTED
No	SYNTHETIC MINOR TO AVOID TITLE V
No	FEDERALLY ENFORCABLE PTIO (FEPTIO)
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

RE: FINAL AIR POLLUTION PERMIT-TO-INSTALL AND OPERATE

Facility ID: 0159000407
Permit Number: P0125003
Permit Type: Initial Installation
County: Morrow

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA) Air Pollution Permit-to-Install and Operate (PTIO) which will allow you to install, modify, and/or operate the described emissions unit(s) in the manner indicated in the permit. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**
- **What should you do if you notice a spill or environmental emergency?**

How to appeal this permit

The issuance of this PTIO is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
30 East Broad Street, 4th Floor
Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

What should you do if you notice a spill or environmental emergency?

Any spill or environmental emergency which may endanger human health or the environment should be reported to the Emergency Response 24-HOUR EMERGENCY SPILL HOTLINE toll-free at (800) 282-9378. Report non-emergency complaints to the appropriate district office or local air agency.

If you have any questions regarding your permit, please contact Ohio EPA DAPC, Central District Office at (614)728-3778 or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,



Michael E. Hopkins, P.E.
Assistant Chief, Permitting Section, DAPC

Cc: Ohio EPA-CDO



FINAL

**Division of Air Pollution Control
Permit-to-Install and Operate
for**

Emerald Bioenergy, LLC formerly Ringler Energy, LLC

Facility ID:	0159000407
Permit Number:	P0125003
Permit Type:	Initial Installation
Issued:	11/19/2018
Effective:	11/19/2018
Expiration:	11/19/2028



**Division of Air Pollution Control
Permit-to-Install and Operate**

for
Emerald Bioenergy, LLC formerly Ringler Energy, LLC

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Final Permit-to-Install and Operate
Emerald Bioenergy, LLC formerly Ringler Energy, LLC
Permit Number: P0125003
Facility ID: 0159000407
Effective Date: 11/19/2018

Authorization

Facility ID: 0159000407
Application Number(s): A0061467
Permit Number: P0125003
Permit Description: PTIO for two units: anaerobic digester, and digester gas-fired engine.
Permit Type: Initial Installation
Permit Fee: \$800.00
Issue Date: 11/19/2018
Effective Date: 11/19/2018
Expiration Date: 11/19/2028
Permit Evaluation Report (PER) Annual Date: Jan 1 - Dec 31, Due Feb 15

This document constitutes issuance to:

Emerald Bioenergy, LLC formerly Ringler Energy, LLC
2881 CR 156
Cardington, OH 43315

of a Permit-to-Install and Operate for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Central District Office
50 West Town St., 5th Floor
P.O. Box 1049
Columbus, OH 43216-1049
(614)728-3778

The above named entity is hereby granted this Permit-to-Install and Operate for the air contaminant source(s) (emissions unit(s)) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the described emissions unit(s) will operate in compliance with applicable State and federal laws and regulations.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

A handwritten signature in black ink, appearing to read "Craig W. Butler".

Craig W. Butler
Director



Final Permit-to-Install and Operate
Emerald Bioenergy, LLC formerly Ringler Energy, LLC
Permit Number: P0125003
Facility ID: 0159000407
Effective Date: 11/19/2018

Authorization (continued)

Permit Number: P0125003

Permit Description: PTIO for two units: anaerobic digester, and digester gas-fired engine.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	B003
Company Equipment ID:	Engine #1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P001
Company Equipment ID:	P001
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Final Permit-to-Install and Operate
Emerald Bioenergy, LLC formerly Ringler Energy, LLC
Permit Number: P0125003
Facility ID: 0159000407
Effective Date: 11/19/2018

A. Standard Terms and Conditions

1. What does this permit-to-install and operate ("PTIO") allow me to do?

This permit allows you to install and operate the emissions unit(s) identified in this PTIO. You must install and operate the unit(s) in accordance with the application you submitted and all the terms and conditions contained in this PTIO, including emission limits and those terms that ensure compliance with the emission limits (for example, operating, recordkeeping and monitoring requirements).

2. Who is responsible for complying with this permit?

The person identified on the "Authorization" page, above, is responsible for complying with this permit until the permit is revoked, terminated, or transferred. "Person" means a person, firm, corporation, association, or partnership. The words "you," "your," or "permittee" refer to the "person" identified on the "Authorization" page above.

The permit applies only to the emissions unit(s) identified in the permit. If you install or modify any other equipment that requires an air permit, you must apply for an additional PTIO(s) for these sources.

3. What records must I keep under this permit?

You must keep all records required by this permit, including monitoring data, test results, strip-chart recordings, calibration data, maintenance records, and any other record required by this permit for five years from the date the record was created. You can keep these records electronically, provided they can be made available to Ohio EPA during an inspection at the facility. Failure to make requested records available to Ohio EPA upon request is a violation of this permit requirement.

4. What are my permit fees and when do I pay them?

There are two fees associated with permitted air contaminant sources in Ohio:

PTIO fee. This one-time fee is based on a fee schedule in accordance with Ohio Revised Code (ORC) section 3745.11, or based on a time and materials charge for permit application review and permit processing if required by the Director.

You will be sent an invoice for this fee after you receive this PTIO and payment is due within 30 days of the invoice date. You are required to pay the fee for this PTIO even if you do not install or modify your operations as authorized by this permit.

Annual emissions fee. Ohio EPA will assess a separate fee based on the total annual emissions from your facility. You self-report your emissions in accordance with Ohio Administrative Code (OAC) Chapter 3745-78. This fee assessed is based on a fee schedule in ORC section 3745.11 and funds Ohio EPA's permit compliance oversight activities. For facilities that are permitted as synthetic minor sources, the fee schedule is adjusted annually for inflation. Ohio EPA will notify you when it is time to report your emissions and to pay your annual emission fees.

5. When does my PTIO expire, and when do I need to submit my renewal application?

This permit expires on the date identified at the beginning of this permit document (see "Authorization" page above) and you must submit a renewal application to renew the permit. Ohio EPA will send a renewal notice to you approximately six months prior to the expiration date of this permit. However, it is

very important that you submit a complete renewal permit application (postmarked prior to expiration of this permit) even if you do not receive the renewal notice.

If a complete renewal application is submitted before the expiration date, Ohio EPA considers this a timely application for purposes of ORC section 119.06, and you are authorized to continue operating the emissions unit(s) covered by this permit beyond the expiration date of this permit until final action is taken by Ohio EPA on the renewal application.

6. What happens to this permit if my project is delayed or I do not install or modify my source?

This PTIO expires 18 months after the issue date identified on the "Authorization" page above unless otherwise specified if you have not (1) started constructing the new or modified emission sources identified in this permit, or (2) entered into a binding contract to undertake such construction. This deadline can be extended by up to 12 months, provided you apply to Ohio EPA for this extension within a reasonable time before the 18-month period has ended and you can show good cause for any such extension.

7. What reports must I submit under this permit?

An annual permit evaluation report (PER) is required in addition to any malfunction reporting required by OAC rule 3745-15-06 or other specific rule-based reporting requirement identified in this permit. Your PER due date is identified in the Authorization section of this permit.

8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit?

If you are required to obtain a Title V permit under OAC Chapter 3745-77 in the future, the permit-to-operate portion of this permit will be superseded by the issued Title V permit. From the effective date of the Title V permit forward, this PTIO will effectively become a PTI (permit-to-install) in accordance with OAC rule 3745-31-02(B). The following terms and conditions of this permit will no longer be applicable after issuance of the Title V permit: Section B, Term 1.b) and Section C, for each emissions unit, Term a)(2).

The PER requirements in this permit remain effective until the date the Title V permit is issued and is effective, and cease to apply after the effective date of the Title V permit. The final PER obligation will cover operations up to the effective date of the Title V permit and must be submitted on or before the submission deadline identified in this permit on the last day prior to the effective date of the Title V permit.

9. What are my obligations when I perform scheduled maintenance on air pollution control equipment?

You must perform scheduled maintenance of air pollution control equipment in accordance with OAC rule 3745-15-06(A). If scheduled maintenance requires shutting down or bypassing any air pollution control equipment, you must also shut down the emissions unit(s) served by the air pollution control equipment during maintenance, unless the conditions of OAC rule 3745-15-06(A)(3) are met. Any emissions that exceed permitted amount(s) under this permit (unless specifically exempted by rule) must be reported as deviations in the annual permit evaluation report (PER), including nonexempt excess emissions that occur during approved scheduled maintenance.

10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report?

If you have a reportable malfunction of any emissions unit(s) or any associated air pollution control system, you must report this to the [DO/LAA] in accordance with OAC rule 3745-15-06(B). Malfunctions that must be reported are those that result in emissions that exceed permitted emission levels. It is your responsibility to evaluate control equipment breakdowns and operational upsets to determine if a reportable malfunction has occurred.

If you have a malfunction, but determine that it is not a reportable malfunction under OAC rule 3745-15-06(B), it is recommended that you maintain records associated with control equipment breakdown or process upsets. Although it is not a requirement of this permit, Ohio EPA recommends that you maintain records for non-reportable malfunctions.

11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located?

Yes. Under Ohio law, the Director or his authorized representative may inspect the facility, conduct tests, examine records or reports to determine compliance with air pollution laws and regulations and the terms and conditions of this permit. You must provide, within a reasonable time, any information Ohio EPA requests either verbally or in writing.

12. What happens if one or more emissions units operated under this permit is/are shut down permanently?

Ohio EPA can terminate the permit terms associated with any permanently shut down emissions unit. "Shut down" means the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31.

You should notify Ohio EPA of any emissions unit that is permanently shut down by submitting a certification that identifies the date on which the emissions unit was permanently shut down. The certification must be submitted by an authorized official from the facility. You cannot continue to operate an emission unit once the certification has been submitted to Ohio EPA by the authorized official.

You must comply with all recordkeeping and reporting for any permanently shut down emissions unit in accordance with the provisions of the permit, regulations or laws that were enforceable during the period of operation, such as the requirement to submit a PER, air fee emission report, or malfunction report. You must also keep all records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, for at least five years from the date the record was generated.

Again, you cannot resume operation of any emissions unit certified by the authorized official as being permanently shut down without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

13. Can I transfer this permit to a new owner or operator?

You can transfer this permit to a new owner or operator. If you transfer the permit, you must follow the procedures in OAC Chapter 3745-31, including notifying Ohio EPA or the local air agency of the change in ownership or operator. Any transferee of this permit must assume the responsibilities of the transferor permit holder.

14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"?

This permit and OAC rule 3745-15-07 prohibit operation of the air contaminant source(s) regulated under this permit in a manner that causes a nuisance. Ohio EPA can require additional controls or modification of the requirements of this permit through enforcement orders or judicial enforcement action if, upon investigation, Ohio EPA determines existing operations are causing a nuisance.

15. What happens if a portion of this permit is determined to be invalid?

If a portion of this permit is determined to be invalid, the remainder of the terms and conditions remain valid and enforceable. The exception is where the enforceability of terms and conditions are dependent on the term or condition that was declared invalid.

B. Facility-Wide Terms and Conditions

1. This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).
 - a) For the purpose of a permit-to-install document, the facility-wide terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) None.
 - b) For the purpose of a permit-to-operate document, the facility-wide terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
 - (1) None.
2. The Ohio EPA has determined that this facility is subject to the requirements of 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Although Ohio EPA has determined that this Generally Available Control Technology NESHAP (GACT) applies, at this time Ohio EPA does not have the authority to enforce this standard. Instead, U.S. EPA has the authority to enforce this standard. Please be advised, that all requirements associated with this rule are in effect and shall be enforced by U.S. EPA. For more information on the area source rules, please refer to the following U.S. EPA website: <http://www.epa.gov/ttn/atw/area/arearules.html>.
3. The emissions unit, B003, contained in this permit are subject to 40 CFR Part 60, Subpart JJJJ - Standards of Performance (NSPS) for Stationary Spark Ignition (SI) Internal Combustion Engines (ICE). The complete NSPS requirements may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website <http://www.ecfr.gov>.

C. Emissions Unit Terms and Conditions

1. B003, Engine #1

Operations, Property and/or Equipment Description:

2001 Guascor SI RICE – fueled with digester gas (1,215 HP; 904 KW and Input at 8.42 mmBtu/hr)

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. See b)(1)b., b)(1)h., and d)7.

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3), as effective June 30, 2008	<p>The nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compound (VOC) standards established pursuant to this rule are equivalent to the standards established in 40 CFR Part 60, Subpart JJJJ.</p> <p>Emissions of sulfur dioxide (SO₂) shall not exceed 0.33 pounds per million Btu (lb/mmBtu).</p> <p>The particulate emissions (PE) standard established pursuant to this rule is equivalent to the standards established in OAC rule 3745-17-11(B)(5)(b).</p> <p>See b)(2)a., c)(1), and c)(2) .</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
b.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective June 30, 2008	The Best Available Technology (BAT) requirements under 3745-31-05(A)(3) do not apply to PE since the potential to emit is less than 10 tons per year. See b)(2)b.
c.	OAC rule 3745-17-07(A)(1)	Visible PE from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by rule.
d.	OAC rule 3745-17-11(B)(5)(b)	PE shall not exceed 0.062 pound per million Btu (lb/mmBtu) of actual heat input for a stationary large internal combustion engine.
e.	OAC rule 3745-18-06(B)	See b)(2)c.
f.	40 CFR Part 60, Subpart JJJJ [In accordance with 40 CFR 60.4230(a)(5), this emissions unit is a spark ignition landfill/digester gas lean burn engine greater than or equal to 500 horsepower (HP) and less than 1,350 HP] Emission standards for NO _x , CO, and VOC adapted from Table 1 to Subpart JJJJ of Part 60.	The exhaust emissions from this engine shall not exceed the following when burning digester gas: Emissions of nitrogen oxides (NO _x) shall not exceed 2.0 gram per horsepower-hour (g/hp-hr) or 150 ppmvd at 15% O ₂ . Emissions of carbon monoxide (CO) shall not exceed 5.0 g/hp-hr or 610 ppmvd at 15% O ₂ . Emissions of volatile organic compounds (VOC) shall not exceed 1.0 g/hp-hr or 80 ppmvd at 15% O ₂ . See b)(2)d and b)(2)e.
g.	40 CFR 60.1 – 19 (40 CFR 60.4246)	Table 3 to Subpart JJJJ of 40 CFR Part 60 – Applicability of Subpart A to Subpart JJJJ shows which parts of the General Provisions in 40 CFR 60.1-19 apply.
h.	OAC rule 3745-114-01	See d)(7).

(2) Additional Terms and Conditions

- a. This Best Available Technology (BAT) emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).

- b. These requirements apply once U.S. EPA approves OAC rule 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- c. Stationary internal combustion engines (ICE) equal to, or less than, ten (10) mmBtu per hour total rated heat input capacity are exempt from paragraphs (D), (F) and (G) of this rule and from rules 3745-18-07 to 3745-18-94 of the Administrative Code.
- d. The spark ignition (SI) ICE is subject to and shall be operated in compliance with the requirements of 40 CFR Part 60, Subpart JJJJ, the standards of performance for stationary SI ICE. The engine shall be certified by the manufacturer to meet the applicable limits of 40 CFR 60.4231.

If the engine was not certified at the factory, the emission standard for the "owner/operator" should be referenced as from 60.4233(e).

- e. The permittee shall comply with the applicable requirements under 40 CFR Part 60, Subpart JJJJ, including the following sections.

60.4233	Emission standards
60.4243(b)	Demonstrate compliance

c) **Operational Restrictions**

- (1) The permittee shall burn only natural gas, or digester gas with a minimum heat content of 500 Btu / scf, in this emissions unit.
- (2) Digester gas combusted in this emissions unit shall not exceed 1,000 parts per million on a volume basis (ppm_v) of hydrogen sulfide.

d) **Monitoring and/or Recordkeeping Requirements**

- (1) The permittee shall perform daily checks, when the emissions unit is in operation firing digester gas and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and

- e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emission incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

- (2) For each day during which the permittee burns a fuel other than natural gas and/or digester gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- (3) The permittee shall maintain monthly records of the natural gas and digester gas fuel usage in this unit in millions of standard cubic feet (MMSCF).
- (4) The permittee shall maintain monthly records of the heat content of the digester gas, in Btu / scf.
- (5) The permittee shall monitor and record hydrogen sulfide concentrations when operating the emissions unit with digester gas using one of the two following options:

Option 1: Weekly sampling using a gas detector tube or portable gas monitoring meter. The permittee shall perform monitoring in accordance with the manufacturer's instructions for use of the associated sampling system. Any deviations from the manufacturer's instructions should be recorded with the concentration results of the sampling.

Option 2: Continuous digester gas monitoring system. The permittee may install a sampling and analysis system to continuously monitor and record the H₂S content of the digester gas. The permittee shall properly install, operate, and maintain a continuous digester gas H₂S monitoring device and recorder that measures and records the H₂S concentrations in the digester gas when the emissions unit is in operation, including periods of startup and shutdown. The H₂S monitoring device and recorder shall be capable of satisfying the performance requirements specified in 40 CFR Part 60, Appendix B, Performance Specification 5 and shall be capable of accurately measuring the H₂S concentration. The H₂S monitoring device and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manuals, with any modifications deemed necessary by the permittee.

Whenever the monitored value for hydrogen sulfide exceeds the lower limit of the accuracy of the monitoring system as measured by either of the above monitoring options, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

- a. the date and time the deviation began;
- b. the magnitude of the deviation at that time;
- c. the date the investigation was conducted;
- d. the name(s) of the personnel who conducted the investigation; and
- e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the hydrogen sulfide concentration below the maximum limit specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

- f. a description of the corrective action;
- g. the date the corrective action was completed;
- h. the date and time the deviation ended;
- i. the total period of time (in minutes) during which there was a deviation;
- j. hydrogen sulfide readings immediately after the corrective action was implemented; and
- k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

- (6) The permittee shall comply with the applicable monitoring and record keeping requirements under 40 CFR Part 60, Subpart JJJJ, including the following sections.

60.4243(e)	Emergency operations, special record keeping
60.4245(a)	Record keeping requirements

- (7) Modeling to demonstrate compliance with, the Toxic Air Contaminant Statute, ORC 3704.03(F)(4)(b), was not necessary because the emissions units maximum annual emissions for each toxic air contaminant, as defined in OAC rule 3745-114-01, will be less than 1.0 ton per year. OAC Chapter 3745-31 requires permittees to apply for and obtain a new or modified permit to install prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that changes in the composition of the materials, or use of new materials, that would cause the emissions of any toxic air

contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new permit to install.

e) Reporting Requirements

- (1) The reports required by this permit may be submitted through Ohio EPA's eBusiness Center: Air Services online web portal; or they may be mailed as a hard copy to Ohio EPA Central District Office.
- (2) The permittee shall submit an annual Permit Evaluation Report (PER) to Ohio EPA Central District Office by the due date identified in the Authorization section of this permit. The PER shall cover a reporting period of no more than twelve months for each air contaminant source identified in this permit.
- (3) The permittee shall identify the following information in the annual permit evaluation report in accordance with the monitoring requirements in d)(1), d)(2), d)(4) and d)(5):
 - a. all periods of time during which the permittee burns a fuel other than natural gas or digester gas in this emissions unit and the type and quantity of fuel burned;
 - b. each month during which digester gas with a minimum heat content of less than 500 Btu / scf was burned in this emissions unit;
 - c. each period during which digester gas containing an H₂S concentration greater than allowed by 1,000 ppmv was burned;
 - d. all days during which any visible particulate emissions were observed from the stack serving this emissions unit; and,
 - e. any corrective actions taken to minimize or eliminate the visible particulate emissions.
- (4) The permittee shall submit reports and such other notifications to the Ohio EPA as are required pursuant to 40 CFR Part 60, Subpart JJJJ, per the following sections:

60.4245(c)	Reporting requirements
60.4245(d)	Reporting requirements

These reports and other notifications shall be submitted to Ohio EPA Central District Office.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

- a. Emissions Limitation:
SO₂ shall not exceed 0.33 lb/mmBtu

Applicable Compliance Method:

The permittee shall demonstrate compliance with the emissions limitation through the required monitoring and recordkeeping in d)(5) and using the following equation:

$$E = (1 / \text{digester gas heat content}) * (10^6 \text{ Btu} / 1 \text{ mmBtu}) * (\text{H}_2\text{S ppm}_v / 1,000,000) * 0.088 \text{ lb H}_2\text{S/ft}^3 \text{ H}_2\text{S} * 1.88 \text{ lb SO}_2/\text{lb H}_2\text{S} = \text{SO}_2 \text{ lb/hr}$$

Where:

E = SO₂ emissions rate, lb/mmBtu

Digester gas heat content = average heat content of digester gas in Btu/scf from d)(4).

H₂S ppm_v = average concentration of H₂S in digester gas, from d)(5).

If required, sulfur dioxide emissions shall be determined according to test Methods 1 - 4, and 6 as set forth in 40 CFR, Part 60 Appendix A.

- b. Emissions Limitation:

Visible PE shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, compliance with the stack visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with U.S. EPA Method 9.

- c. Emission Limitations:

PE shall not exceed 0.062 lb/mmBtu.

Applicable Compliance Method:

If required, compliance with the particulate emissions limitation shall be determined in accordance with U.S. EPA Reference Methods 1-4 and 5, as applicable, of 40 CFR Part 60, Appendix A.

- d. Emission Limitations:

The exhaust emissions from this engine when burning biodigester gas shall not exceed:

3.0 g/hp-hr or 220 ppmvd at 15% O₂ of NO_x
5.0 g/hp-hr or 610 ppmvd at 15% O₂ of CO

1.0 g/hp-hr or 80 ppmvd at 15% O₂ of VOC

Applicable Compliance Method:

Compliance with the emission standards shall be demonstrated in accordance with the testing requirements in section f)(2).

- (2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the procedures specified in 40 CFR 60.4244 and the following requirements:
- a. The emission testing shall be conducted within 180 days after issuance of the permit. Subsequent performance testing shall be conducted every 8,760 hours of engine operation or 3 years, whichever comes first.
 - b. Each performance test conducted shall be conducted within 10% and 100% peak (or the highest achievable) load and according to the requirements in 40 CFR 60.8 and under specific conditions that are specified by Table 2 of Subpart JJJJ.
 - c. The following test method(s) shall be employed, in accordance with **Table 2 of Subpart JJJJ**, to demonstrate compliance with the allowable mass emission rates:
 - i. Method 1 or 1A of 40 CFR Part 60, Appendix A or ASTM Method D6522-00 to select the sampling port location and the number of traverse points.
 - ii. Method 2 of 40 CFR Part 60, Appendix A or Method 19 of 40 CFR Part 60, Appendix A to determine the exhaust flowrate of the engine.
 - iii. Method 3, 3A, or 3B of 40 CFR Part 60, Appendix A or ASTM Method D6522-00 to measure O₂ at the exhaust stack.
 - iv. Method 4 of 40 CFR Part 60, Appendix A; or Method 320 of 40 CFR Part 63, Appendix A; or ASTM D6348-03 to measure the moisture content at the exhaust stack.
 - v. Method 10 of 40 CFR Part 60, Appendix A; or Method 320 of 40 CFR Part 63, Appendix A; or ASTM Method D6522-00; or ASTM D6348-03 to measure CO at the exhaust stack.
 - vi. Method 7E of 40 CFR Part 60, Appendix A; or Method 320 of 40 CFR Part 63, Appendix A; or ASTM Method D6522-00; or ASTM D6348-03 to measure NO_x at the exhaust stack.
 - vii. Method 25A with Method 18 (for methane or ethane determination and subsequent subtraction from THC determined via Method 25A) of 40 CFR Part 60, Appendix A; or Method 25A fitted with a hydrocarbon cutter as described in 40 CFR 1065.265; or Method 18 of 40 CFR 60, Appendix A; or Method 320 of 40 CFR Part 63, Appendix A; or ASTM D6348-03 to measure VOC at the exhaust stack.

- d. During the emission testing, the emissions unit shall be operated under operational conditions approved in advance by Ohio EPA Central District Office. Operational conditions that may need to be approved include, but are not limited to, the production rate, the type of material processed, material make-up (digester gas or natural gas, etc.), or control equipment operational limitations (power output, fuel consumption rate, etc.). In general, testing shall be done under “worst case” conditions expected during the life of the permit. As part of the information provided in the “Intent to Test” notification form described below, the permittee shall provide a description of the emissions unit operational conditions they will meet during the emissions testing and describe why they believe “worst case” operating conditions will be met. Prior to conducting the test(s), the permittee shall confirm with Ohio EPA Central District Office that the proposed operating conditions constitute “worst case”. Failure to test under the approved conditions may result in Ohio EPA not accepting the test results as a demonstration of compliance.
 - e. Not later than 60 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to Ohio EPA Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in Ohio EPA Central District Office's refusal to accept the results of the emission test(s).
 - f. Personnel from Ohio EPA Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
 - g. A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to Ohio EPA Central District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from Ohio EPA Central District Office.
- g) Miscellaneous Requirements
- (1) None.

2. P001, Flare

Operations, Property and/or Equipment Description:

Anaerobic Digester - 14.52 mmBtu/hr Flare

- a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

- (1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. b)(1)b., and b)(2)b.

- (2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3), as effective June 30, 2008	<p>Emissions of carbon monoxide (CO) shall not exceed 0.31 pounds per million BTU (lb/mmBtu).</p> <p>Emissions of volatile organic compounds (VOC) shall not exceed 0.66 lb/mmBtu.</p> <p>Emissions of sulfur dioxide (SO₂) shall not exceed 0.33 lb/mmBtu.</p> <p>Emissions of nitrogen oxides (NO_x) shall not exceed 0.068 lb/mmBtu.</p> <p>See b)(2)a., b)(2)c. b)(2)g., c)(1), and c)(2).</p>
b.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective June 30, 2008	The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO _x emissions from this air contaminant

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		source since the potential to emit is less than 10 tons/year. See b)(2)b.
c.	OAC rule 3745-17-11(B)	See b)(2)f.
d.	OAC rule 3745-17-07(A)	See b)(2)g.
e.	OAC rule 3745-18-06(E)	The emission limitations of this rule are less stringent than the emission limitations established by OAC rule 3745-31-05(A)(3).

(2) Additional Terms and Conditions

- a. This Best Available Technology (BAT) emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- b. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- c. The emissions from the digestion process shall be vented to the flare when the combined heat and power unit (B003) is not firing digester gas. The permittee shall not allow biogas pressure to build in any tank that would induce emergency venting through tank pressure relief valves to the atmosphere.
- d. Anaerobic digesters, including all associated equipment and grounds, shall be designed, operated, and maintained so as to prevent the emission of objectionable odors.
- e. The permittee shall properly install, operate, and maintain a device to continuously monitor the flare pilot flame or electric arc ignition when the emissions unit is in operation. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturers recommendations, instructions, and operating manuals.
- f. The uncontrolled mass rate of particulate emissions from this emissions unit is less than 10 pounds per hour. Pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the process weight rate is equal to zero. Process weight is defined in OAC rule 3745-17-01(B)(17).
- g. This emissions unit is exempt from the visible PE limitations specified in OAC rule 3745-17-07(A) pursuant to OAC rule 3745-17-07(A)(3)(h), because the emissions unit is not subject to the requirements of OAC rule 3745-17-11.

- h. The NO_x emissions limitations were developed to reflect the potential to emit for this emissions unit. Therefore, monitoring, recordkeeping, and reporting requirements are not necessary to demonstrate compliance with these emissions limitations.

c) Operational Restrictions

- (1) Digester gas combusted in the flare serving this emissions unit shall not exceed 1,000 parts per million on a volume basis (ppm_v) of hydrogen sulfide.
- (2) Digester gas combusted in the flare serving this emissions unit shall not have a heat content less than 500 Btu/scf.
- (3) The permittee shall use an ultraviolet (UV) flame eye detector to monitor for the presence of a flame and an electric arc ignition system.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall monitor and record hydrogen sulfide concentrations when operating the emissions unit with digester gas using one of the two following options:

Option 1: Weekly sampling using a gas detector tube or portable gas monitoring meter. The permittee shall perform monitoring in accordance with the manufacturer's instructions for use of the associated sampling system. Any deviations from the manufacturer's instructions should be recorded with the concentration results of the sampling.

Option 2: Continuous digester gas monitoring system. The permittee may install a sampling and analysis system to continuously monitor and record the H₂S content of the digester gas. The permittee shall properly install, operate, and maintain a continuous digester gas H₂S monitoring device and recorder that measures and records the H₂S concentrations in the digester gas when the emissions unit is in operation, including periods of startup and shutdown. The H₂S monitoring device and recorder shall be capable of satisfying the performance requirements specified in 40 CFR Part 60, Appendix B, Performance Specification 5 and shall be capable of accurately measuring the H₂S concentration. The H₂S monitoring device and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manuals, with any modifications deemed necessary by the permittee.

Whenever the monitored value for hydrogen sulfide exceeds the lower limit of the accuracy of the monitoring system as measured by either of the above monitoring options, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

- a. the date and time the deviation began;
- b. the magnitude of the deviation at that time;
- c. the date the investigation was conducted;

- d. the name(s) of the personnel who conducted the investigation; and
- e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the hydrogen sulfide concentration below the maximum limit specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

- f. a description of the corrective action;
- g. the date the corrective action was completed;
- h. the date and time the deviation ended;
- i. the total period of time (in minutes) during which there was a deviation;
- j. hydrogen sulfide readings immediately after the corrective action was implemented; and
- k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

- (2) The permittee shall maintain monthly records of the heat content of the digester gas, in Btu/scf.
- (3) The permittee shall maintain daily records of all periods of time during which the electric arc system was inoperable or there was no flare pilot flame when digester gas was present in the feedstock equilibrium tank, primary digester, or dual-purpose tank, and the combined heat and power unit was not firing digester gas.
- (4) The permittee shall monitor and record the volume of digester gas flared in standard cubic feet per year, and shall calculate and record the annual heat input to the flare in million Btu.

e) Reporting Requirements

- (1) The reports required by this permit may be submitted through Ohio EPA's eBusiness Center: Air Services online web portal; or they may be mailed as a hard copy to the appropriate district office or local air agency.
- (2) The permittee shall submit the PER in the form and manner provided by the director by the due date identified in the Authorization section of this permit. The PER shall cover a reporting period of no more than twelve-months for each air contaminant source identified in this permit.

- (3) The permittee shall identify the following information in the annual PER in accordance with the monitoring requirements in d)(1), d)(2) and d)(3):
- a. all periods of time during which the flare's electric arc ignition system was not functioning properly or there was no flare pilot flame when digester gas was present in the feedstock equilibrium tank, primary digester, or dual-purpose tank, and the combined heat and power unit was not firing digester gas;
 - b. any monthly record showing that digester gas with a minimum heat content of less than 500 Btu / scf was burned in this emissions unit; and,
 - c. each period during which digester gas containing an H₂S concentration greater than allowed by c)(1) was burned.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions limitation:

Emissions of CO shall not exceed 0.31 lb/mmBtu.

Applicable compliance method:

Compliance shall be demonstrated using the emissions factor for CO from U.S. EPA reference document AP-42, Fifth Edition, Compilation of Air Pollution Emission Factors, Section 13.5 Table 13.5-2 (02/18).

If required, the permittee shall demonstrate compliance with applicable emission limitations through emission testing performed in accordance with 40 CFR Part 60, Appendix A, Methods 1-4 and 40 CFR Part 60, Appendix A, Reference Method 10.

b. Emissions limitation:

Emissions of VOC shall not exceed 0.66 lb/mmBtu.

Applicable compliance method:

Compliance shall be demonstrated using the emissions factor for VOC from U.S. EPA reference document AP-42, Fifth Edition, Compilation of Air Pollution Emission Factors, Section 13.5 Table 13.5-2 (02/18).

If required, the permittee shall demonstrate compliance with applicable emission limitations through emission testing performed in accordance with 40 CFR Part 60, Appendix A, Methods 1-4 and 40 CFR Part 60, Appendix A Reference Method 25A.

c. Emissions limitation:

Emissions of NO_x shall not exceed 0.068 lb/mmBtu.

Applicable compliance method:

Compliance shall be demonstrated using the emissions factor for NO_x from U.S. EPA reference document AP-42, Fifth Edition, Compilation of Air Pollution Emission Factors, Section 13.5 Table 13.5-1 (02/18).

If required, the permittee shall demonstrate compliance with applicable emission limitations through emission testing performed in accordance with 40 CFR Part 60, Appendix A, Methods 1-4 and 40 CFR Part 60, Appendix A Reference Method 7E

d. Emissions Limitation:

Emissions of SO₂ shall not exceed 0.33 lb/mmBtu.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the emissions limitation through the required monitoring and recordkeeping in d)(1) and using the following equation:

$$E = (10^6 \text{ Btu} / 1 \text{ mmBtu}) * (1 / \text{digester gas heat content}) * (\text{H}_2\text{S ppm}_v / 1,000,000) * 0.088 \text{ lb H}_2\text{S/ft}^3 \text{ H}_2\text{S} * 1.88 \text{ lb SO}_2/\text{lb H}_2\text{S} = \text{SO}_2 \text{ lb/mmBtu}$$

Where:

E = SO₂ emissions rate, lb/mmBtu

Digester gas heat content = average heat content of digester gas in Btu/scf from d)(2).

H₂S ppm_v = average concentration of H₂S in digester gas, from d)(1)

If required, sulfur dioxide emissions shall be determined according to test Methods 1 - 4, and 6 as set forth in 40 CFR, Part 60 Appendix A.

- e. If required, the permittee shall confirm, through the applicable methods and procedures specified in 40 CFR Part 60.18, that the flare's exit velocity and the net heating value of the digester gas conform to the maximum design values specified by the flare manufacturer.

g) Miscellaneous Requirements

- (1) None.